REMARKS

This is in response to the Office Action dated August 11, 2006.

Claims 1-3, 13, 14, 19, and 24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester (US 5,687,175) in view of Steeves (US 6,570,487).

Claims 5-8, 10, 12, 16, 17, 21, 22, 26, and 27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester.

Claims 18, 20, and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester in view of Steeves, and further in view of Maeda (US 5,926,546).

Per the above amendment, claims 10 and 12 have been canceled. The rejection of those claims is therefore moot.

The rejections by the Examiner are respectfully traversed as follows.

A) Differences between the present invention defined by claims 1 and 13 and the combination of Rochester and Steeves are described.

The Examiner admitted that Rochester does not disclose that the road-side device receives a plurality of responses of a single on-vehicle device to a polling signal transmitted by the road-side device.

Steeves discloses a distributed tag reader system. In this system, to avoid collisions among tag signals, each of tags remains in a low-power quiescent stand-by state. After a reader transmits an activation signal to a tag placed within a range to activate the tag, the reader sends a request for information to the activated tag. This tag transmits the requested information to the reader (col. 3, line 65-col. 4, line 5). That is, the tag transmits

a packet of data to a reader and checks for an acknowledge signal from the reader. If so acknowledged, the tag transmits additional packets to the reader. If the acknowledge signal is not received, the tag again transmits the current packet to the reader. After all of the packets have been successfully transmitted, the tag is put back in the low-power quiescent stand-by state (col. 9, lines 23-37).

Therefore, in this system, in response to a request sent from a reader, a tag transmits information to the reader by dividing the information into a plurality of packets and sending the packets one after another. In this case, because an activation signal is used to activate a tag, the activation signal has no relation to the present invention.

However, each packet denotes a piece of information differing from those in the other packets. Further, in this system, no communication is started in response to reception of a plurality of responses to a polling signal. In other words, reception of a plurality of packets from the tag denotes a communication between the reader and the tag.

In contrast, in the present invention, a communication between an on-vehicle device and a road-side device is started on condition that the road-side device receives a plurality of responses to a polling signal. These responses may be, for example, the same as one another. Therefore, for example, the road-side device can recognize that the on-vehicle device receiving a polling signal in either a quasi communication area or a standard communication area is reliably entered into the standard communication area when the road-side device receives a plurality of responses, and the road-side device can stably communicate with the on-vehicle device placed in the standard communication area.

B) Differences between the present invention defined by claims 2 and 14 and the combination of Rochester and Steeves are described.

Rochester discloses an adaptive time-division multiplexing communications protocol system. In this system, a central unit transmits a first signal (column 9, lines 25-26), remote

units such as sensors 26 and 30 receive the first signal and transmit first response signals in response to the receipt of the first signal (column 9, lines 27-31), the central unit receives the first response signals and transmits a second signal to each remote unit (column 9, lines 32-35), and each remote unit receives the second signal and transmits a data signal to the central unit in response to the receipt of the second signal (column 9, lines 36-40).

In contrast, in the present invention, a first sensor of an ETC system detects a vehicle at a first position, and a second sensor of the ETC system detects a vehicle at a second position. When the first sensor detects a vehicle, first means of the ETC system transmits a polling signal, and second means of the ETC system receives a response of an on-vehicle device to the polling signal. Then, in cases where the first and second sensors detect the vehicle, a third means of the ETC system starts next radio communication with the on-vehicle device after the second means receives the response.

The Examiner insists that the first and second sensors represent the sensors 26 and 30 of Rochester receiving the first signal from the central unit (first insistence). In this case, the ETC system inevitably represents the remote units of Rochester, and the vehicle with the on-vehicle device represents the central unit of Rochester. The Examiner further insists that the remote units receiving a first signal (i.e., the central unit transmits a first signal) represents the first means transmitting a polling signal, and insists that the central unit receiving first response signals represents the second means receiving a response of an on-vehicle device. That is, the Examiner insists that the central unit represents the ETC system having the first means and the second means (second insistence). But such different interpretations are inconsistent. Therefore, it is respectfully submitted that the Examiner's first insistence is inconsistent with the Examiner's second insistence.

Moreover, Examiner asserts that an acknowledgement packet signal represents the next communication because a mobile unit (i.e., central unit) sends the acknowledgement packet signal to a corresponding sensor when finding duplicate IDs. However, it is believed that the finding of duplicate IDs does not represent detection in both the first and second

sensors. As a first reason, because the mobile unit finding duplicate IDs represents the vehicle in the present invention according to the Examiner's first insistence, the mobile unit does not represent the third means of the ETC system starting the next radio communication. As a second reason, because the mobile unit compares a detected sensor ID with a stored sensor ID for each sensor (column 6, lines 30-34), the mobile unit starts communication with each sensor when receiving a single sensor ID matching with a stored sensor ID of the sensor, and the mobile unit does not start communication in response to the receipt of two detected sensor IDs, for example, sent from two sensors 26 and 30.

C) Differences between the present invention defined by claims 5 and 16 and Rochester are described.

In the present invention, first means of an on-vehicle device receives data from a road-side device, second means of the on-vehicle device receives a communication end signal from the road-side device after the first means receives the data, and third means of the on-vehicle device handles the data as effective data regardless of whether or not the second means successfully receives the communication end signal.

Even though the on-vehicle device does not receive a communication end signal, the data received from the road-side device is apparently effective. Therefore, the on-vehicle device handles the data as effective data even when the second means does not successfully receive the communication end signal.

In contrast, the Examiner asserts that because a remote unit representing the road-side device transmits a first response signal to a central unit denoting a mobile unit (column 9, lines 27-31 in Rochester), first means of the on-vehicle device receives data (i.e., first response signal) from the road-side device in the present invention.

Further, in the system of Rochester, a mobile unit representing an on-vehicle device transmits an Acknowledge Packet signal 40 to a sensor representing the road-side device.

Upon receipt of the Acknowledge Packet signal, the sensor is placed into a wait state whereby it will not respond to Poll Packets (column 6, lines 18-24). The Examiner further asserts that because the on-vehicle device provides the Acknowledge Packet signal representing the communication end signal, the on-vehicle device can also receive the Acknowledge Packet signal.

Applicant respectfully disagrees with this logic asserted by Examiner. In Rochester, because the mobile unit receives the first response signal from the sensor, the reception of a communication end signal in the mobile unit is absolutely necessary to ascertain the end of the first response signal. Therefore, the reception of the Acknowledge Packet signal in the sensor in Rochester is considerably different from the reception of the communication end signal in the on-vehicle device.

The Examiner further asserts that because sensors which successfully receive the communication end signal continue to respond to poll packets, the on-vehicle device handles the data as effective data regardless of whether or not the second means successfully receives the communication end signal.

Applicant respectfully disagrees with the Examiner. First, Rochester discloses sensors which do not successfully receive an Acknowledge Packet signal (representing the communication end signal as insisted by Examiner) continue to respond to poll packets (col. 6, lines 29-30). Secondly, the continuation of responding to poll packets in Rochester has no relation with the handling of the data as effective data in the present invention.

D) Differences between the present invention defined by claims 7 and 17 and Rochester are described.

In the present invention, first means of a road-side device receives data from an on-vehicle device, second means of the road-side device receives a communication end signal from the on-vehicle device after the first means receives the data, and third means

of the road-side device handles the data as effective data regardless of whether or not the second means successfully receives the communication end signal.

Even though the road-side device does not receive a communication end signal, the data received from the on-vehicle device is apparently effective. Therefore, the road-side device handles the data as effective data even when the second means does not successfully receive the communication end signal.

In contrast, in Rochester, remote units such as sensors receive a first signal from a mobile unit (column 9, lines 27-28). Upon receipt of an Acknowledge Packet signal from the mobile unit, the sensor is placed into a wait state whereby it will not respond to Poll Packets (column 6, lines 18-24). Sensors which do not successfully receive an Acknowledge Packet signal continue to respond to poll packets (col. 6, lines 29-30). Although when not successfully receiving an Acknowledge Packet signal, each sensor continues to send a data signal 38 to the mobile unit, this action of the sensor has no relation with the handling of data as effective data in the present invention.

For all of the above reasons, applicant respectfully submits that independent claims 1, 2, 5, 7, 13, 14, 16 and 17 (and their respectively dependent claims) as amended in the prior amendment are clearly distinguishable from the teachings of Rochester, either singly or in combination with Steeves. Accordingly, the rejection under 35 U.S.C. 103(a) should now be withdrawn, and the case passed to issue.

Respectfully submitted,

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